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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,970	07/08/2004	Georg Weihrauch	WEIHRAUCH=3	3379

1444 7590 01/09/2007

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EXAMINER	
HEITBRINK, JILL LYNNE	
ART UNIT	PAPER NUMBER
1732	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,970	WEIHRAUCH, GEORG	
	Examiner	Art Unit	
	Jill L. Heitbrink	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *75,79-106 and 109-151* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *75,79-106 and 109-151* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Double Patenting

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Nov. 1, 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 75, 79-106 and 109-151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klinkhammer Pat. No. 5,531,582 taken together with either Rudolf et al. Pat. No. 5,217,732 or Rees (UNDERSTANDING INJECTION MOLD DESIGN) in view of INJECTION MOLDING HANDBOOK, 3rd edition by Rosato et al.

4. Klinkhammer discloses injection molding bristles. The ratio of the cross section to the length of the channels are clearly within the ratio of 1:10 as shown in the figures and as known for the size of molded bristles for brushes and toothbrushes. Klinkhammer

discloses venting of the channel length during molding (col. 2, lines 50-58) which is transverse to the flow direction of the polymer mass. Rudolf teaches the injection molding into a thin mold cavity having vents at high pressures up to 30,000 psi (col. 1, lines 10-15) and the cavity being subjected to a pressure of 30,000 psi during packing (col. 4, lines 10-13). It would have been obvious to a person of ordinary skill in the art to inject the material in the mold of Klinkhammer at a pressure of 2000 to 5000 bar and the cavity having a pressure of more than 300 bar in view of the teaching of Rudolf since these are known pressures used currently in modern injection mold to obtain high production rates and good surface on the molded product (Rudolf col. 1, lines 54-57). Additionally, Rees teaches this high injection pressure of even higher than 200 MPa (middle of page 15) and a cavity pressure for thin wall products of 40-50 MPa (page 16). It would have been obvious to a person of ordinary skill in the art to inject the material in the mold of Klinkhammer at a pressure of 2000 to 5000 bar and the cavity having a pressure of more than 300 bar in view of the teaching of Rees so as to fill the thin wall products of the channels. Rosato teaches the injected material having a high core speed in the center flow (page 249) and a large shearing effect due to wall friction (pages 249,250) of the mass under distinct longitudinal orientation of the polymer molecules (page 244). The injected material having a high core speed in the center flow and a large shearing effect due to wall friction of the mass under distinct longitudinal orientation of the polymer molecules would have been obvious in Klinkhammer as shown by Rosato in view of the elongated shape of the cavity. The injection pressure being set to support crystal seed formation would have been obvious

from the longitudinal orientation of the polymer in the elongated cavity. Klinkhammer discloses simultaneously injecting the bristles which may have different lengths and cross sections as shown by the drawings. The molding of bristles with different bending elasticity by molding different polymer masses in the same molding channels would have been obvious since each molding mass has different intrinsic properties. Rosato et al. (page 670, top right column and page 672, bottom left column to top of right column) teaches the dynamic pressure loss from the injection unit (nozzle) to the end of the cavity as 125.8MPa or 1.258×10^5 kPa. This is just the amount lost. The actual injection would require pressure at the end and throughout the cavity for fill and for packing. Plus, additionally pressure would clearly be need for the specific cavity shape of Klinkhammer. An injection pressure of at least 2000 bar would have been obvious to fill the cavity of Klinkhammer in view of the teaching of the pressure loss from the nozzle to the end of the cavity and the pressure in the injection means. Applicant argues that there is no motivation for the combining of the references. The examiner believe that a person of ordinary skill in the art would have analyzed the injection operation using known analysis such as Rosato to determine the effects and necessary operating condition to perform the process of Kutik or Klinkhammer (see col.6, lines 20-26).

5. Claims 75, 79-106, 109-112, 118-127,135 and 147-151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kutik Pat. No. 3,357,058 taken together with either Rudolf et al. Pat. No. 5,217,732 or Rees (UNDERSTANDING INJECTION MOLD DESIGN) in view of INJECTION MOLDING HANDBOOK, 3rd edition by Rosato et al.

6. Kutik discloses injection molding bristles. The ratio of the cross section to the length of the channels are clearly within the ratio of 1:10 as shown in the figures and as known for the size of molded bristles for brushes and toothbrushes. Kutik discloses venting of the channel length during molding (col. 1, lines 67-69) which is transverse to the flow direction of the polymer mass. Rudolf teaches the injection molding into a thin mold cavity having vents at high pressures up to 30,000 psi (col. 1, lines 10-15) and the cavity being subjected to a pressure of 30,000 psi during packing (col. 4, lines 10-13). It would have been obvious to a person of ordinary skill in the art to inject the material in the mold of Kutik at a pressure of 2000 to 5000 bar and the cavity having a pressure of more than 300 bar in view of the teaching of Rudolf since these are known pressures used currently in modern injection mold to obtain high production rates and good surface on the molded product (Rudolf col. 1, lines 54-57). Additionally, Rees teaches this high injection pressure of even higher than 200 MPa (middle of page 15) and a cavity pressure for thin wall products of 40-50 MPa (page 16). It would have been obvious to a person of ordinary skill in the art to inject the material in the mold of Kutik at a pressure of 2000 to 5000 bar and the cavity having a pressure of more than 300 bar in view of the teaching of Rees so as to fill the thin wall products of the channels. Rosato teaches the injected material having a high core speed in the center flow (page 249) and a large shearing effect due to wall friction (pages 249,250) of the mass under distinct longitudinal orientation of the polymer molecules (page 244). The injected material having a high core speed in the center flow and a large shearing effect due to wall friction of the mass under distinct longitudinal orientation of the polymer molecules

would have been obvious in Kutik as shown by Rosato in view of the elongated shape of the cavity. The injection pressure being set to support crystal seed formation would have been obvious from the longitudinal orientation of the polymer in the elongated cavity. Kutik discloses simultaneously injecting the bristles which may have different lengths and cross sections as shown by the drawings. The molding of bristles with different bending elasticity by molding different polymer masses in the same molding channels would have been obvious since each molding mass has different intrinsic properties. Rosato et al. (page 670, top right column and page 672, bottom left column to top of right column) teaches the dynamic pressure loss from the injection unit (nozzle) to the end of the cavity as 125.8MPa or 1.258×10^5 kPa. This is just the amount lost. The actual injection would require pressure at the end and throughout the cavity for fill and for packing. Plus, additionally pressure would clearly be need for the specific cavity shape of Kutik. An injection pressure of at least 2000 bar would have been obvious to fill the cavity of Kutik view of the teaching of the pressure loss from the nozzle to the end of the cavity and the pressure in the injection means. Applicant argues that there is no motivation for the combining of the references. The examiner believe that a person of ordinary skill in the art would have analyzed the injection operation using known analysis such as Rosato to determine the effects and necessary operating condition to perform the process of Kutik or Klinkhammer (see col.6, lines 20-26).

7. The declaration under 37 CFR 1.132 filed Nov. 1, 2006 is insufficient to overcome the rejection of claims 75, 79-106 and 109-151 based upon either Klinkhammer Pat. No. 5,531,582 or Kutik Pat. No. 3,357,058 taken together with

INJECTION MOLDING HANDBOOK, 3rd edition by Rosato et al. as set forth in the last Office action because: as shown by Rudolf et al. Pat. No. 5,217,732 or Rees (UNDERSTANDING INJECTION MOLD DESIGN) the high injection pressure and high cavity pressure are known in the art of injection molding for filling cavity of reduced thicknesses.

Response to Arguments

8. Applicant's arguments filed March 22, 2006 have been fully considered but they are not persuasive.

9. Applicant argues that Rosato does not teach high core speed, even though the core speed is taught to be faster than a flow along the surface of the mold cavity since there is no indication of how fast. The term "high" is relative and does not define any value.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill L. Heitbrink whose telephone number is (571) 272-1199. The examiner can normally be reached on Monday-Friday 9 am -2 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jill L. Heitbrink
Primary Examiner
Art Unit 1732

jlh